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New species of Uredineae—XIII*

JOSEPH CHARLES ARTHUR

The present paper in the author's series of new species is made up partly of newly discovered species and partly of old species requiring a change of specific or generic names. There is also a substitution of two new generic names and one old one for untenable ones. When preparing the classification of the Uredinales, announced by the writer before the Vienna Botanical Congress in 1906, it was necessary to work with much imperfectly studied material. As the classification was based upon life histories, and as the life cycle of the majority of species was then unrecorded and largely unknown, a number of errors were made due to erroneous assumptions. These errors are being corrected as knowledge of the rusts increases, and a number are taken in hand at this time. The genera to which attention is now directed are *Lyso-spora*, *Telospora* and *Dasyspora*, as they were given in the Vienna paper.

***Puccinia pacifica* Blasdale, sp. nov.**

II! Uredinia amphigenous, more abundant beneath, thickly scattered, irregularly rounded, 0.3–1 mm. across, at first bullate, soon naked, somewhat pulverulent, dark chestnut-brown, ruptured epidermis very conspicuous; urediniospores ellipsoid or obovate, 22–26 by 26–32 μ ; wall chestnut-brown, 2–3 μ thick, finely echinulate, the pores 2, equatorial.

III. Telia similar to the uredinia but somewhat darker and less pulverulent; teliospores oblong or obovate-oblong, 20–24 by 38–48 μ , rounded or obtuse above, obtuse or narrowed below, somewhat constricted at septum; wall chestnut-brown, lighter below, 1–1.5 μ thick, thicker above, 3–7 μ , smooth; pedicel colorless, fragile, once or twice length of spore when unbroken, 7–9 μ in diameter.

On *Plantago maritima* L., Montara Point, San Mateo County, California, August 7, 1920, *W. C. Blasdale 1108*. A specimen of

* Contribution from the Botanical Department of Purdue University Agricultural Experiment Station.

this interesting new rust was sent to the writer immediately upon its discovery, with the name and permission to publish. It was found in considerable abundance on a bluff overlooking the Pacific Ocean.

***Puccinia irrequisita* Jackson, sp. nov.**

II. Uredinia amphigenous, scattered, round, 0.3–0.5 mm. across, early naked, pulverulent, cinnamon-brown, ruptured epidermis conspicuous; urediniospores globose or broadly ellipsoid, 20–23 by 23–26 μ ; wall cinnamon-brown, 1–1.5 μ thick, moderately and finely echinulate, the pores three, equatorial.

III. Telia amphigenous, chiefly epiphyllous, scattered, round, 0.3–0.5 mm. across, tardily naked, pulvinate, blackish brown, or grayish from the overlying epidermis; teliospores irregularly ellipsoid, somewhat angular, 24–29 by 34–40 μ , rounded or obtuse above, rounded or truncate below, scarcely constricted at septum; wall chestnut-brown, 3–3.5 μ thick, not appreciably thickened above, obscurely and very finely verrucose; pedicel colorless, short, deciduous.

On *Centaurea americana* Nutt., Austin, Texas, April 6, 1901, II (Ellis & Ev. Fungi Columb. 1642); same, June 5, 1901, II, III (type) (Barth. N. Am. Ured. 1338). Both collections were made by W. H. Long. This species is similar to *Puccinia Centaureae* Mart., with which it has been listed. It differs from that species in the more irregular teliospores with their considerably thicker walls, and in the tardily naked telial sori. These differences, taken together with the fact that the host is not an introduced one but native, makes it seem best to consider the species strictly American. The particular study of it has been made by Professor H. S. Jackson, who has supplied the diagnosis.

***Puccinia additicia* Jackson & Holway, nom. nov.**

Puccinia Coreopsidis Jackson & Holway; Arth. Am. Jour. Bot. 5: 536. 1918.

My attention has been called by Professor H. S. Jackson to the publication of *Puccinia Coreopsidis* Wakefield, from tropical Africa, in the Kew Bulletin for 1918, page 209. The part in which this name, with description and illustration, appears was issued in August, 1918, thus antedating the publication of the Guatemalan name by four months. The two rusts are entirely distinct, thus

necessitating a new name for the latter, which has been supplied by Professor Jackson as above.

***Puccinia opposita* (Orton) comb. nov.**

Allodus opposita Orton, Mem. N. Y. Bot. Gard. 6: 185. 1916.

This species is still only known from the type collection on *Anemone globosa* Nutt., from Sulphur Springs, Colorado.

***Puccinia Erigeniae* (Orton) comb. nov.**

Allodus Erigeniae Orton, Mem. N. Y. Bot. Gard. 6: 191. 1916.

The type collection on *Erigenia bulbosa* (Michx.) Nutt. was made by J. Dearness at London, Canada, in 1892, and distributed in Ellis's North American Fungi, No. 1040b, under the name of *P. Pimpinellae*, and showed both aecia and telia. The only other collection known up to the present time was made by F. D. Kelsey at Oberlin, Ohio, April, 1894, showing aecia only.

***Uromyces coördinatus* sp. nov.**

O. Pycnia hypophyllous, scattered abundantly over surface of leaf, preceding and accompanying the aecia, pale- or honey-yellow, barely noticeable, subepidermal, globoid or flask-shaped, 100–140 μ broad; ostiolar filaments 50–75 μ long, protruding above surface of leaf.

I. Aecia hypophyllous, evenly scattered over surface of leaf, at first bullate and opening by a pore, 0.4–0.7 mm. across; peridia erect, or slightly recurved, erose; peridial cells cuboidal or polygonal, 22–24 by 23–29 μ , abutted or slightly overlapping, the outer wall 10–12 μ thick, striate, the inner wall 3–5 μ thick, noticeably verrucose; aeciospores globoid or broadly ellipsoid, 15–19 by 19–24 μ ; wall nearly or quite colorless, 1–2 μ thick, finely verrucose.

III. Telia hypophyllous, at first arising from and evenly filling the aecial cups, afterward independently but similarly grouped, the ruptured epidermis appearing like a peridium, somewhat pulverulent, dark chocolate-brown; teliospores irregularly ellipsoid, oblong or obovoid, 16–22 by 17–31 μ ; wall cinnamon- or chestnut-brown, 1–2 μ thick, sometimes with a small colorless papilla over the apical pore, closely and noticeably verrucose, inclined at times to be striate; pedicel fragile, colorless, largely deciduous.

On *Tithymalus Palmeri* (Engelm.) Arth. (*Euphorbia Palmeri* Engelm.), Laguna Mountains, California, July 19, 22, 1920; same,

Big Bear Lake, California, July 31, 1920, and August 1, 1920 (type); all collected by E. Bethel, and all showing O, I, and III.

The first specimen received from Mr. Bethel was sent as an *Aecidium*, "with *Uromyces* which appears to belong with it." With the collection of August 1 he inclosed this note: "From field observations I am confident that this *Aecidium* is followed by the *Uromyces*." The specimens sent by Mr. Bethel show clearly that the telia arise from the same mycelium that bore the aecia, as most of the telial sori are contained in the aecial cups.

The aecia are morphologically indistinguishable from those occurring commonly on the same host and similar hosts throughout the Rocky Mountains, and which the writer for a time referred to *Aecidium Tithymali* Arth. (this name to be restricted to forms occurring east of the Rockies), but now believes to be the aecial stage of the heteroecious *Uromyces occidentalis* Sydow.

The teliospores of *U. coördinatus* are indistinguishable from those of *U. occidentalis* on species of *Lupinus* in the same region. Farther east in the Rockies, however, teliospores of this lupine rust are often slightly smaller and paler. The connection of the common Rocky Mountain aecia on *Tithymalus*, not followed by any other spore forms on the same host, with the *Uromyces occidentalis* on *Lupinus* was first pointed out by Mr. A. O. Garrett some three years ago in a letter to the writer, and backed by strong circumstantial evidence. Later Mr. E. Bethel supplied data and independently reached the same conclusion. Although this connection has not yet been established by cultures, it seems reasonably certain.

The teliospores are also scarcely distinguishable from *Uromyces Tranzschelii* Sydow, a short cycle form on the same and similar species of *Tithymalus*. These three species of rusts with different life cycles, form a most interesting group of coördinated species, which eventually under some other classification may possibly be placed under a single name.

***Polythelis suffusca* (Holway) comb. nov.**

Puccinia Pulsatillae Rostr. Cat. Pl. Soc. Bot. Copenhagen 1, hyponym. 1881; Vesterg. Bot. Notiser 1902: 169. 1902. Not *P. Pulsatillae* Kalchbr. 1865.

Puccinia suffusca Holway, Jour. Myc. 8: 171. 1902.

Polythelis Pulsatillae Arth. Résult. Sci. Congr. Bot. Vienne 341. 1906.

The specific name adopted for this species under the genus *Polythelis* in the North American Flora was already preoccupied when the genus *Polythelis* was established, and should not have been taken up. The next older name is now substituted. A history of the name *Puccinia Pulsatillae* is given by Holway in the Journal of Mycology (8: 171. 1902). Kalchbrenner's name applies to the very dissimilar species that occurs on some of the same hosts and is usually listed as *Puccinia DeBaryana* Thüm.

***Ravenelia havanensis* sp. nov.**

O. Pycnia amphigenous, petiolicolous, and on young, swollen shoots, thickly scattered, prominent, punctiform, hemispheric or subconic, smoky-brown, subcuticular, 130–250 μ broad by 65–80 μ high; hymenium flat; ostiolar filaments wanting.

II. Uredinia of the primary form following the pycnia, scattered, of the secondary form epiphyllous and somewhat petiolicolous, in small groups or solitary, subcuticular, soon naked, cinnamon-brown, irregularly rounded, 0.3–0.6 mm. across, ruptured cuticle noticeable; paraphyses wanting; urediniospores obovate-oblong, or linear-oblong, 13–18 by 26–38 μ , rounded or acute above; wall pale- or cinnamon-brown, paler below, 1.5–2 μ thick, sometimes a little thickened above, 2–4 μ , sparsely and prominently echinulate, the pores 4, equatorial.

III. Telia epiphyllous, subcuticular, in irregular groups, early naked, chestnut-brown, ruptured cuticle noticeable; teliospore-heads chestnut-brown, 4–6 cells across, oblong-hemispheric, 65–85 by 65–70 μ across, 45–55 μ high, each spore bearing 4–6, straight, subconical, hyaline tubercles, 2–3 μ long; cysts hyaline, globoid, small, not readily bursting in water; pedicel hyaline, very short.

On *Enterolobium cyclocarpum* (Sw.) Griseb., Capdevila, Havana, Cuba, December 5, 1919, II₂, *J. R. Johnston 1195*: same, May 10, 1920, O, II₁, *J. R. Johnston 1201*: same December 1, 1920, II₂ on seeding plants, III on old tress, *J. R. Johnston* (type). There are two species of *Ravenelia*, both on *Enterolobium Timbouva*, described by Spegazzini from Argentina and Paraguay, the only ones known on this host genus. No mention is made of uredinia in the descriptions, and the writer has not seen material. The Cuban species appears to be abundantly distinct from the South

American forms, a view which the difference in host species, geographical location, and habit of the rust favor. From the material submitted by Mr. Johnston it seems that the pycnia appear in May, thickly covering young leaves and shoots and causing more or less hypertrophy, and are soon followed by primary uredinia. The secondary uredinia appear some months later unaccompanied by pycnia, and are mostly confined to the upper surface of the leaves, without producing hypertrophy, and on old plants the telia are similarly formed.

Gallowaya pinicola nom. nov.

Coleosporium Pini Gall. Jour. Myc. 7: 44. 1891. Not *C. Pini* Lagerh. 1889.

Gallowaya Pini Arth. Résult. Sci. Congr. Bot. Vienne 336. 1906.

It has been known for some time that the specific name selected by Dr. B. T. Galloway for his rust, which was afterward transferred to the genus *Gallowaya*, had been published some two years earlier by Lagerheim in Mitt. Bad. Bot. Verein, for an entirely different rust. The present occasion is taken to rectify this long-standing mishap by suggesting another specific name.

LIOSPORA gen. nov.

Cycle of development includes pycnia, aecia and telia. The characters are essentially those of the genus *Tranzschelia* with the uredinia omitted, the following species is taken as the type of the genus.

Liospora tucsonensis sp. nov.

O. Pycnia chiefly epiphyllous, scattered over large areas, preceding or accompanying the aecia, hemispheric or conic, conspicuous, chocolate-brown, subcuticular, large, 140–160 μ in diameter, 40–100 μ high; ostiolar filaments wanting.

I. Aecia hypophyllous, thickly scattered over large areas, short-cylindric, large, 0.4–0.6 mm. in diameter; peridium ample, divided into few (often 4) widely spreading recurved lobes, white; peridial cells in face view angularly ellipsoid, 22–30 by 28–34 μ , abutted or somewhat overlapping, the outer wall smooth, the inner wall evenly verrucose; aeciospores globoid, 16–20 by 18–22 μ ; wall colorless or pale golden-yellow, moderately thin, 1–1.5 μ , closely and minutely verrucose.

III. Telia chiefly hypophyllous accompanying the aecia, gregarious in irregular groups and somewhat confluent or scattered, large and irregular, 1–2 mm. across, dark chocolate-brown, pulverulent, the membranous epidermis soon ruptured but usually partly remaining and conspicuous; teliospores oblong, 18–24 by 32–38 μ , rounded above, rounded or paler and more or less narrowed below, considerably constricted but usually not separating at septum, the two cells of same size and shape or the lower one smaller and narrower; wall dark chestnut-brown or paler in lower cell, uniformly thin, 1–2 μ thick, closely and evenly verrucose; pedicel colorless, short, rarely longer than lower cell, fragile; mesospores not uncommon.

On *Anemone stenophylla* Poepp., Tucson Hills, Arizona, February 29, 1920, H. W. Thurston, communicated by L. N. Goodding 81.

This genus is characterized as it was intended to characterize the genus *Lysospora*, when that genus was founded in 1906 (Résult. Sci. Congr. Bot. Vienne 340). But the type collection for that genus was Sydow's Uredineen 216, which consisted of a mixture on the same leaves of aecia of the heteroecious *Tranzschelia punctata* (Pers.) Arth., and telia of the short cycle *Puccinia singularis* Magn., which were inadvertently assumed to be genetically related. The genus *Lysospora*, therefore, becomes a synonym of *Tranzschelia*, and a new name is supplied for the genus that was in mind in 1906, but for which no representative was known until the present collection came to hand.

The species forms one of the series of four correlated species of which (1) *Tranzschelia punctata*, the plum rust, with a full spored cycle is the heteroecious form; (2) *T. cohaesa* (Long) Arth., also with a full spored cycle is the autoecious form; (3) *L. tucsonensis*, another long cycle form like the last but with the uredinia omitted from the cycle; and (4) *Polythelis fusca* (Pers.) Arth., the short cycle form with only pycnia and telia. The systematic position of these four forms depends upon the views taken of their evolution and the most serviceable method of representing such relationship taxonomically. With slight modification in the description the four species could be combined into one, having four forms of expression. The author, however, while believing that they are closely related, and but cyclic modifications of one original form, has found that convenience of study and a general clarity of comprehension warrants their separation under

four genera, in accordance with his well-known scheme of classification of the Uredinales in general.

There is justification in separating these forms into four species aside from their cyclic behavior, for each has small morphological features that show distinctive structural advance in addition to physiological habit. The aeciospores of *L. tucsonensis* are slightly smaller and thinner walled than in the other species, and the telia are large and at first blister-like, tending strongly to coalesce, instead of small and evenly scattered as in *P. fusca* and *T. punctata*, or somewhat circinating as in *T. cohaesa*, and have more mesospores than any one of these.

The vicinity of Tucson seems to be especially favorable for the appearance of the less usual cyclic development of various forms of rusts. It was within a few hundred yards of the Desert Botanical Laboratory that *Puccinia Carnegiana* and *P. tumamocensis*, the long and short cycle forms of a divergent rust on *Dipterostemon* (*Brodiaea*) were found and somewhat studied. The new rust on the upright euphorbias, recently discovered by Mr. E. Bethel, and described in this article, is evidently a product of similar environmental conditions. In fact the whole arid region of southern Arizona and California offer a remarkable field for the study of the cyclic development of the rusts. Not only the cyclic development but also the cytological features of the rusts, especially those displaying contracted cycles, greatly need investigation, and in no species more than in the one under discussion.

TELEUTOSPORA Arthur & Bisby, gen. nov.

In his paper on the short cycle *Uromyces* of the United States G. R. Bisby (Bot. Gaz. **69**: 213. 1920) has excluded *Uromyces hyalinus* Peck from this group, although the species had been made the type of the genus *Telospora* (Résult. Sci. Congr. Bot. Vienne 346. 1906), which was intended to include only short cycle species. In the Arthur Herbarium the sheets of *U. hyalinus*, which were studied by Bisby in preparing his paper, bear many notes signed by him. On June 20, 1916, he made a sectional drawing of pycnia from a specimen of Seym. & Earle, Econ. Fungi Suppl. *B5b*, with the note: "Pycnia are found associated with uredinia, sometimes with telia; teliospores often in uredinia."

The same situation was detected on the same day in a collection by C. F. Baker, from Fort Collins, Colorado, collected June 10, 1894, from which he drew the conclusion: "Apparently the condition is, that uredinia occur, later being often occupied by teliospores." Two days afterward in studying the same specimen he notes, that "separate uredinia occur, occupied only by urediniospores, found at the tips of the younger leaves." On June 21, 1916, he found pycnia associated with uredinia in a specimen of Ellis & Ev. Fungi Columb. 2187, from Kansas. The association of pycnia with uredinia in other collections has later been verified by persons working upon material in the Arthur Herbarium, especially by H. R. Rosen the year following.

From the above showing the short cycle genus of ordinary *Uromyces* appearance, which was characterized in 1906 under the name *Telospora*, requires another name, and *Teleutospora* is therefore here proposed, with *Uromyces Rudbeckiae* Arth. & Holw. on *Rudbeckia laciniata*, as the type. This with two other American species should now be written as follows:

Teleutospora Rudbeckiae (Arth. & Holw.) Arth. & Bisby
(*Uromyces Rudbeckiae* Arth. & Holw.; Arth. Bull. Iowa Agr.
Coll. 1884: 154. 1885).

Teleutospora Solidaginis (Niessl) Arth. & Bisby (*Uromyces Solidaginis* Niessl, Verh. Natur.-Ver. Brünn 10: 163. 1872)

Teleutospora bauhiniicola Arth. & Bisby (*Uromyces bauhiniicola*
Arth. Bot. Gaz. 39: 389. 1905).

MICROPUCCINIA Rostrup

Some months ago Professor H. S. Jackson, while working with material in the Arthur Herbarium, discovered that the type species of the genus *Dasyscypha*, *D. foveolata* Berk. & Curt., is not a short cycle form, as had been assumed, but possesses uredinia of a very remarkable appearance. This discovery will be duly set forth in a paper to be published by Professor Jackson after a time. Not long afterward he came across the genus *Micropuccinia* in Rostrup's excellent treatise on plant diseases, published in 1902, being duly characterized on page 266, with a number of species appended, the first being *Micropuccinia Ribis* (DC.) Rostr. This genus, if interpreted to include also those short cycle forms that

germinate immediately upon maturity, which Rostrup kept separate in his genus *Leptopuccinia* on page 268 of the same work, covers the ground intended by the writer for the short cycle genus set forth in his Vienna paper of 1906, and for which he unfortunately selected the untenable name *Dasyspora*. The following species, mentioned in the paper referred to, are here transferred to the genus *Micropuccinia*, the new combinations to be credited to Arthur and Jackson in each instance.

Micropuccinia Actinellae (Webb.) Arthur & Jackson, comb. nov. (*Puccinia Actinellae* Syd.); **M. Adoxae** (Hedw.) comb. nov. (*P. Adoxae* Hedw.); **M. Aegopodii** (Schum.) comb. nov. (*P. Aegopodii* Schum.); **M. alpina** (Fckl.) comb. nov. (*P. alpina* Fckl.); **M. andina** (Diet. & Neger) comb. nov. (*P. andina* Diet. & Neger, *P. Ranunculi* Seym.); **M. Anemones-virginianae** (Schw.) comb. nov. (*P. Anemones-virginianae* Schw.); **M. annularis** (Str.) comb. nov. (*P. annularis* Schlecht.); **M. Arenariae** (Schum.) comb. nov. (*P. Arenariae* Schröt., *P. Spergulae* DC.); **M. asarina** (Kunze) comb. nov. (*P. asarina* Kunze); **M. Asteris** (Duby) comb. nov. (*P. Asteris* Duby, *P. Erigerontis* E. & E., *P. Helenii* Schw.); **M. astrantiicola** (Bubák) comb. nov. (*P. astrantiicola* Bubák, *P. Astrantiae* Kalchbr. not B. & C.); **M. Betonicae** (A. & S.) comb. nov. (*P. Betonicae* DC.); **M. Buxi** (DC.) comb. nov. (*P. Buxi* DC.); **M. canadensis** (Arth.) comb. nov. (*P. canadensis* Arth.); **M. Chrysoplenii** (Grev.) comb. nov. (*P. Chrysoplenii* Grev.); **M. Circaeae** (Pers.) comb. nov. (*P. Circaeae* Pers.); **M. Cnici-oleracei** (Pers.) comb. nov. (*P. Cnici-oleracei* Pers.); **M. columbiensis** (E. & E.) comb. nov. (*P. columbiensis* E. & E., *P. bicolor* E. & E.); **M. Comandrae** (Peck) comb. nov. (*P. Comandrae* Peck); **M. conrescens** (E. & E.) comb. nov. (*P. conrescens* E. & E., *P. compacta* Kunze); **M. conferta** (D. & H.) comb. nov. (*P. conferta* D. & H.); **M. conglomerata** (Str.) comb. nov. (*P. conglomerata* Str.); **M. Cruciferarum** (Rud.) comb. nov. (*P. Cruciferarum* Rud.); **M. Cupheae** (Holw.) comb. nov. (*P. Cupheae* Holw., *P. jaliscensis* Holw.); **M. Dayi** (Clint.) comb. nov. (*P. Dayi* Clint.); **M. distorta** (Holw.) comb. nov. (*P. distorta* Holw.); **M. Drabae** (Rud.) comb. nov. (*P. Drabae* Rud.); **M. enormis** (Fckl.) comb. nov. (*P. enormis* Fckl.); **M. Epilobii** (DC.) comb. nov. (*P. Epilobii* DC.); **M. expansa** (Link) comb. nov.

(*P. expansa* Link); **M. Fergussoni** (Berk. & Br.) comb. nov. (*P. Fergussoni* Berk. & Br.); **M. Glechomatis** (DC.) comb. nov. (*P. Glechomatis* DC.); **M. Grindeliae** (Peck) comb. nov. (*P. Grindeliae* Peck); **M. grisea** (Str.) comb. nov. (*P. grisea* Wint.); **M. Haleniae** (A. & H.) comb. nov. (*P. Haleniae* A. & H.); **M. Heterisiae** (H. S. Jackson) comb. nov. (*P. Heterisiae* H. S. Jackson, *P. aspera* D. & H.); **M. heterospora** (B. & C.) comb. nov. (*P. heterospora* B. & C.); **M. Heucherae** (Schw.) comb. nov. (*P. Heucherae* Diet., *P. Saxifragae* Schl.); **M. Holboellii** (Hornem.) comb. nov. (*P. Holboellii* Rostr., *P. palefaciens* D. & H.); **M. Huteri** (Syd.) comb. nov. (*P. Huteri* Syd.); **M. Imperatoriae** (Jacky) comb. nov. (*P. Imperatoriae* Jacky); **M. Jueliana** (Diet.) comb. nov. (*P. Jueliana* Diet.); **M. Lantanae** (Farl.) comb. nov. (*P. Lantanae* Farl.); **M. lateritia** (B. & C.) comb. nov. (*P. lateritia* B. & C.); **M. Leveillei** (Mont.) comb. nov. (*P. Leveillei* Mont., *P. Geranii-silvatici* Karst.); **M. Lobeliae** (Gerard) comb. nov. (*P. Lobeliae* Gerard); **M. Malvacearum** (Bert.) comb. nov. (*P. Malvacearum* Bert.); **M. Mesneriana** (Thüm.) comb. nov. (*P. Mesneriana* Thüm.); **M. mesomajalis** (B. & C.) comb. nov. (*P. mesomajalis* B. & C.); **M. Millefolii** (Fckl.) comb. nov. (*P. Millefolii* Fckl.); **M. ornata** (A. & H.) comb. nov. (*P. ornata* A. & H.); **M. Parnassiae** (Arth.) comb. nov. (*P. Parnassiae* Arth.); **M. Pazschkei** (Diet.) comb. nov. (*P. Pazschkei* Diet.); **M. Polemonii** (D. & H.) comb. nov. (*P. Polemonii* D. & H.); **M. porphyrogenita** (Curt.) comb. nov. (*P. porphyrogenita* Curt., *P. acuminata* Peck); **M. praemorsa** (D. & H.) comb. nov. (*P. praemorsa* D. & H.); **M. Pulsatillae** (Kalchbr.) comb. nov. (*P. Pulsatillae* Kalchbr., *P. DeBaryana* Thüm.); **M. Pyrolae** (Cke.) comb. nov. (*P. Pyrolae* Cke.); **M. recedens** (Syd.) comb. nov. (*P. recedens* Cke.); **M. rubefaciens** (Johans.) comb. nov. (*P. rubefaciens* Johans.); **M. scandica** (Johans.) comb. nov. (*P. scandica* Johans.); **M. Seymeriae** (Burr.) comb. nov. (*P. Seymeriae* Burr.); **M. Sherardiana** (Körn.) comb. nov. (*P. Sherardiana* Körn.); **M. Silphii** (Schw.) comb. nov. (*P. Silphii* Schw.); **M. Solidaginis** (Peck) comb. nov. (*P. Solidaginis* Peck); **M. Spegazzinii** (DeT.) comb. nov. (*P. Spegazzinii* DeT., *P. australis* Speg.); **M. Suksdorfii** (E. & E.) comb. nov. (*P. Suksdorfii* E. & E.); **M. Synedrellae** (Henn.) comb. nov. (*P. Synedrellae* Henn.,

P. Emiliae Henn.); **M. tuberculans** (E. & E.) comb. nov. (*P. tuberculans* E. & E.); **M. turrita** (Arth.) comb. nov. (*P. turrita* Arth.); **M. uralensis** (Tranz.) comb. nov. (*P. uralensis* Tranz.); **M. variolans** (Hark.) comb. nov. (*P. variolans* Hark.); **M. Veronicarum** (DC.) comb. nov. (*P. Veronicarum* DC.); **M. verruca** (Thüm.) comb. nov. (*P. verruca* Thüm.); **M. Virgaureae** (DC.) comb. nov. (*P. Virgaureae* DC.); **M. Vossii** (Körn.) comb. nov. (*P. Vossii* Körn.); **M. Xanthii** (Schw.) comb. nov. (*P. Xanthii* Schw.); **M. Xylorrhizae** (Arth.) comb. nov. (*P. Xylorrhizae* Arth.).

There are two names under *Dasyscyra* in the Vienna paper, *D. Adenostegiae* and *D. cinnamomea*, that are not transferred, as it has been found in the meantime that these rusts are probably not short cycle species. A number of the names in that paper appear in the above list as synonyms. In addition to this list of names from the Vienna paper the following species, which are entitled to be placed under *Micropuccinia* and credited to Arthur and Jackson, are for convenience here transferred.

Micropuccinia albulensis (Magn.) comb. nov. (*P. albulensis* Magn.); **M. Cryptotaeniae** (Peck) comb. nov. (*P. Cryptotaeniae* Peck); **M. curtipes** (Howe) comb. nov. (*P. curtipes* Howe); **M. Hydrophylli** (P. & C.) comb. nov. (*P. Hydrophylli* P. & C.); **M. Hyssopi** (Schw.) comb. nov. (*P. Hyssopi* Schw.); **M. Ligustici** (E. & E.) comb. nov. (*P. Ligustici* E. & E.); **M. Linkii** (Klotzsch) comb. nov. (*P. Linkii* Klotzsch); **M. Lygodesmiae** (E. & E.) comb. nov. (*P. Lygodesmiae* E. & E.); **M. maculosa** (Schw.) comb. nov. (*P. maculosa* Schw.); **M. Mertensiae** (Peck) comb. nov. (*P. Mertensiae* Peck); **M. obliqua** (B. & C.) comb. nov. (*P. obliqua* B. & C., *P. Gonolobi* Rav.); **M. Physostegiae** (Peck & Clint.) comb. nov. (*P. Physostegiae* Peck & Clint.); **M. Ranunculi** (Blytt) comb. nov. (*P. Ranunculi* Blytt); **M. Waldsteiniae** (Curt.) comb. nov. (*P. Waldsteiniae* Curt.).

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